REMARKS

Claims 1-57 are currently pending in the application. By this amendment, independent claims 1, 8, 18, 23, 31, 34, 37, 41, 43, 45 will have been amended for the Examiner's consideration. Further, Applicant submits claims 2-4, 9, 11-15, 19-20, 24, 26-28, 32, 38, 42 and 46 will have been amended to correct antecedent issues. No new matter will have been added.

Accordingly, reconsideration and withdrawal of the pending rejections are requested in view of the instant amendment and the accompanying remarks.

Amendment to the Claims are Fully Supported by the Original Disclosure

The above amendments do not add new matter to the application and are fully supported by the specification.

Applicant notes independent claims 1, 8, 18, 23, 31, 34, 37, 41, 41, 43, 45 will have been amend to specify "A method of generating elastic waves through an earth formation *at a designated location*" and "*wherein activation of said first motorized reaction mass provides variable location adjustment for said at least two pads while said at least two pads are positioned at the designated location of the acoustic borehole source, such that said at least two pads generate elastic waves through the earth formation at multiple locations while at the designated location.*" It is noted that the number of motorized reacctin masses and number of pads may change depending on which independent claim being referenced. Further, support for amending independent claims 1, 8, 18, 23, 31, 34, 37, 41, 41, 43, 45 are provided at paragraphs [0016] to [0018], [0032] to [0038] and [0046] of the specification.

Applicant respectfully requests reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

35 U.S.C. § 103 Rejections

Over PETERMANN in view of MALLET

Claims 1-8, 12-23, 27-33, 41-42, 48-52 and 55 are rejected under 35 U.S.C. §103(a) as being unpatentable over Petermann (US 5,160,814) (hereafter "PETERMANN") in view of Mallet et al. (US 4,700,803) (hereafter "MALLET").

As a preliminary matter, Applicant respectfully submits that nothing in PETERMANN or any other prior art of record, disclose or suggest that which is at least recited in Applicant's independent claims 1, 8, 18, 23, 31 and 41, as currently amended, which recite, *inter alia*:

"An acoustic borehole source for generating elastic waves through an earth formation *at a designated location* via a wall comprising:...

...wherein activation of said first motorized reaction mass provides variable location adjustment for said at least two pads while said at least two pads are positioned at the designated location of the acoustic borehole source, such that said at least two pads generate elastic waves through the earth formation at multiple locations while at the designated location."

Moreover, Applicant submits that neither PETERMANN nor MALLET or any prior art or any combination of prior of record, disclose or suggest the combination of features recited in at least independent claims 1, 8, 18, 23, 31 and 41, as currently amended.

Applicant respectfully submits that a *prima facie* case of obviousness has not been established as the applied references fail to teach each and every element of the independent claims.

Respectfully, the PETERMANN discloses in Col. 4, lines 13-68 and FIG.s 2-3 as to "how" the arms 94 and 96 are deployed and/or retracted. The "operating sequence" of the PETERMANN device is explained in Col. 5, lines 14-54 and FIG.s 2-3. In particular, the PETERMANN discloses that once the apparatus 32 is deployed to a "desired position", then the arms 94 and 96 are deployed. Further, the PETERMANN discloses energizing the valve 115 to move the piston 106 to transmit an oscillatory impact-type movement to the pads 98. However, nothing in PETERMANN teaches or

> Once the apparatus 32 was deployed in the desired position in the wellbore, the valve 113 would be energized and the valve 115 de-energized to permit pressure fluid to enter the chamber 112 and urge the piston 106 toward the coupling part 82 and to extend the pads 98 into forcible engagement with the wellbore wall 13. A suitable electrical control circuit would then be brought into operation to effect periodic energization of the valve 115 to cause flow of fluid to the chamber 110 or relief of pressure of fluid in the chamber 110, depending on the position of valve 115 to effect oscillatory impact-type movement of the piston 106 which would be transmitted to the pads 98. (see Col. 5, lines 30-42 of PETERMANN)
>
> Of course, when it is desired to move the apparatus 32 to another location in the wellbore, the valve 113 would be de-energized and the valve 115 moved to an energized position to hold the pads 98 retracted by conducting pressure fluid to the chamber 110 to move the piston 106 to retract the pads. (see Col. 5, lines 49-54 of PETERMANN)

suggests doing anything other than activating the valves to retract or deploy the arms after the apparatus 32 is deployed at a "desired position", which is contrary to Applicant's claimed invention as currently amended. The PETERMANN reference fails to teach or suggest that *wherein activation of said first motorized reaction mass provides variable location adjustment for said at least two pads while said at least two pads are positioned at the designated location of the acoustic borehole source, such that said at least two pads generate elastic waves through the earth formation at multiple locations while at the designated location,* as at least recited in the independent claims, as currently amended.

Further, Applicant respectfully disagrees with the Examiner's assertions that it would have been obvious to modify the teachings of MALLET with those of PETERMANN, especially since PETERMANN fails to cure the deficiencies of MALLET and, in fact, teaches away from MALLET, as will be explained below.

MALLET does not cure the deficiencies of PETERMANN and merely shows an acoustic logging tool or sonde 10 suspended on a cable 12 in a well borehole 14, wherein the sonde 10 has acoustic electronics 30 and acoustic transducers 32 (see

Figures 1, Col. 2, lines 29-51 of MALLET). The acoustic transducers 32 includes a structure 34 with elements 36 with coils 38 and 39 that are used to generate a signal magnetic field with the element 36 biasing a transducer plate in and out (see Figure 4, Col. 3, lines 24-52 of MALLET). MALLET, thus fails to teach or suggest the subject matter noted above as deficient in PETERMANN.

Again, MALLET merely discloses the element 36 biasing a transducer plate in and out (see Figure 4, Col. 3, lines 24-52 of MALLET). MALLET, however, fails to teach or suggest that *wherein activation of said first motorized reaction mass provides variable location adjustment for said at least two pads while said at least two pads are positioned at the designated location of the acoustic borehole source, such that said at least two pads generate elastic waves through the earth formation at multiple locations while at the designated location*, as at least recited in the independent claims, as currently amended.

As noted above, Applicant respectfully disagrees with the Examiner's assertions that it would have been obvious to modify the teachings of MALLET with those of PETERMANN, especially since MALLET fails to cure the deficiencies of PETERMANN.

MALLET shows an acoustic logging tool or sonde 10 suspended on a cable 12 in a well borehole 14, wherein the sonde 10 has acoustic electronics 30 and acoustic transducers 32 (see Figures 1, Col. 2, lines 29-51 of MALLET). The acoustic transducers 32 includes a structure 34 with elements 36 with coils 38 and 39 that are used to generate a signal magnetic field with the element 36 biasing a transducer plate in and out (see Figure 4, Col. 3, lines 24-52 of MALLET), as opposed to PETERMANN discloses several embodiments for generating a signal, both of which are utilizing a hydraulic fluid (signals) via a hydraulic control circuit, for example:

Embodiment 1: a hydraulic piston is directly connected to linkage for the contactor pads and an oscillatory signal is imposed on the piston for generating vibratory seismic signals,

Embodiment 2: a compressed gas-driven impactor is moved to and held in a cocked position by a hydraulically-actuated setting and latching mechanism. Hydraulic control valves and electrical operating circuits are disposed on the apparatus and may be controlled from the surface by way of a wireline cable

extending through the tubing string

Further, the PETERMANN device already discloses utilizing electrical signals, e.g., the hydraulic control circuit, see FIG. 3, Col. 4, lines 37-62.

As the devices in the cited documents operate in different manners, Applicant submits that it would not have been obvious to change the hydraulic fluid of PETERMANN to include electrical signals from the MALLET device, nor is there any suggestion in the art of record that such a modification, even if obvious (which Applicant submits it is not) would allow PETERMANN to operate in its intended manner. In particular, Applicant submits that if MALLET were combined with PETERMANN, (which Applicant submits it cannot) it is unclear how either of these devices could be combined together without a complete reengineering, and even if possible, the intended reengineered device would not operate either as it intended manner or even at all.

Respectfully, Applicant submits that no proper combination of the applied art can render unpatentable the instant invention.

Moreover, Applicant notes that the applied documents of record fail to teach the requisite motivation or rationale for combining PETERMANN and MALLET as suggested by the Examiner.

Respectfully, Applicant notes, in particular, the PETERMANN and MALLET references also fails to disclose, or even suggest:

1) Because each of the pushing rods is connected to a reaction mass, none of the pushing rods pivot around a fixed position relative to the tool body. An advantage of the claimed configuration is that the pushing angle can be changed to enhance propagation, as described in the Specification at paragraphs [0035-0036]. In particular, the angle at which the force is imparted against the casing can be selected by controlling the motorized reaction masses to change the pushing rod angle with respect to the casing, whereas the cited combination would have a fixed angle. Further, the claimed invention can achieve additional enhancements by changing the phase differential between the motorized

reaction masses, as described in the Specification at paragraphs [0035-0036]. These features enable production of different wave types which would not be possible with the cited combination, even assuming the clamping features were somehow suitable for generating acoustic disturbances.

A § 103 rejection requires the Examiner to first establish a prima facie case of obviousness: "The Examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the Examiner does not produce a prima facie case, the Applicant is under no obligation to submit evidence of nonobviousness." MPEP 2142. The Court of Appeals for the Federal Circuit has set forth three elements, which must be shown for prima facie obviousness:

> "First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teachings or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

Further, as noted above, the PETERMANN and MALLET devices are distinct from each other. Thus, because the art of record fails to provide the necessary motivation or rationale for combining the art of record in the manner asserted by the Examiner, Applicant submits no proper combination of PETERMANN and MALLET teach or suggest the combination of features recited in at least the independent claims.

Further, Applicant submits that the dependent claims depending form the independent claims 1, 8, 18, 23, 31 and 41, are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. Moreover, Applicant submits that, as the above-noted claims recite additional features of the invention not

disclosed by any proper combination of PETERMANN in view of MALLET, these further claims are separately patentable over the art of record.

Accordingly, Applicant requests that the Examiner reconsider and withdraw the rejection of claims 1-9, 12-24, 27-36 and 41-44 under 35 U.S.C. §103(a) and indicate that these claims are allowable.

Over PETERMANN in view of MALLET in further view of PAULSSON

Claims 11, 26, 37-40, 45-47, 54 and 57 were rejected under 35 U.S.C. § 103(a) for being allegedly unpatentable over CHELMINSKI in view of MALLET in further view of Paulsson (U.S. 4,715,470) (hereafter "PAULSSON").

The Examiner acknowledges that PETERMANN as modified by MALLET lacks, among other things, a compression spring connecting the first and second motorized reaction masses. However, the Examiner explains that this feature is taught by PAULSSON and that it would have been obvious to combine the teachings of these documents.

Applicant respectfully submits that a *prima facie* case of obviousness has not been established as the applied references fail to teach each and every element of the claims, as fully discussed above.

Applicant submits that neither PETERMANN, MALLET nor PAULSSON disclose or suggest the combination of features recited in at least independent claims, as currently amended. Applicant also submits that no proper combination of these documents disclose or suggest the combination of features recited in at least independent claims, as currently amended.

As explained above, PAULSSON lacks any disclosure or suggestion with regard the noted above deficiencies of either PETERMANN or MALLET references.

Moreover, in addition to failing to disclose the combination of features recited in the above-noted independent claims, as currently amended, Applicant submits no proper combination of these documents discloses or suggests the combination of

features recited in independent claims or in the above-noted claims which depends from the independent claims, as currently amended.

Applicant notes, the above noted argument, e.g., it is unclear how the MALLET features could be combined into the PETERMANN device, is furthered by the fact that many modifications would be required, far beyond that would have been obvious to one skilled in the art to further modify the modified PETERMANN device to include the features of PAULSSON, as asserted by the Examiner.

Accordingly, Applicant respectfully submits that the above-noted rejection under 35 U.S.C. § 103(a) should be withdrawn.

CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious Applicant's invention, as recited in each of claims 1--57. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Further, any amendments to the claims which have been made in this response and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Should the Examiner have any questions or comments, he is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
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